

PATENT  
TH0681N (US)  
DFH:EM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	)	
	)	
DAVID M. SINGLETON, LOUIS KRAVETZ,	)	
BRENDAN D. MURRAY	)	
	)	
Serial No. 09/655,964	)	Group Art Unit: 1751
	)	
Filed September 6, 2000	)	Examiner: Necholus Ogden Jr.
	)	
HIGHLY BRANCHED PRIMARY ALCOHOL	)	July 11, 2007
COMPOSITIONS, AND BIODEGRADABLE	)	
<u>DETERGENTS MADE THEREFROM</u>	)	

COMMISSIONER FOR PATENTS  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

SECOND DECLARATION UNDER RULE 132

William Warren Schmidt hereby declares:

THAT he received an A.B. in Chemistry from the University of Tennessee at Chattanooga, Magna Cum Laude, in 1967; and that he received his M.S. Degree in Chemistry in 1969 from the University of Tennessee; and he received his PhD in Organic Chemistry from the University of Tennessee at Knoxville in 1975; and

THAT he has been employed by Shell Oil Company or one of its related companies since 1987 and has worked in the areas of the structure/property relationships of surfactants, the utility of alcohol-based surfactants, especially as detergent structures changed, the formulation of liquid detergents, the investigation of the detergency of alcohol ethoxylates, and the utility of alternate hydrophiles for surfactants; and

THAT he is aware that the Examiner has stated that the showing in the previous Rule 132 Declaration was not commensurate in scope with the claims; and

THAT at his request, new experiments were carried out and that three skeletal isomerization experiments were carried out according to the procedure of Example 5 of the present application utilizing a commercially available C<sub>13-14</sub> internal olefin feedstock made by Shell Chemical LP and that a similar zeolite catalyst was used and similar equipment and operating procedure were used wherein the only difference was that the reaction temperature was lower (220-230°C) in order to obtain products with lower levels of branching; and olefin samples LR 24125-36 and LR 26522-98 were isomerized at a reaction temperature of 220°C and olefin sample LR 24125-37 was isomerized at a reaction temperature of 230°C and thus had a slightly higher branching index; and

THAT the branched olefin samples described above were hydroformylated according to the procedure described in Example 5 of the present application and then each of the branched primary alcohol compositions was sulfated according to the procedure described in Example 6 of the present application; and the primary alcohol compositions were analyzed according to the NMR procedures described in Example 6 of the present application; and that the results of the analyses are described in the following table:

Table 1

	LR 24125-36	LR 24125-37	LR 26522-98
Average Carbon Number	14.8	14.8	13.8
Branching Index	0.94	1.03	0.92
Percent Methyl Branching at the C <sub>2</sub> Position	8.0	8.5	8.4
Percent Ethyl Branching at the C <sub>2</sub> Position	2.4	2.2	2.3
Percent Propyl or Greater Branching at the C <sub>2</sub> Position	8.1	7.2	8.4
Percent Overall Methyl Branching	79.9	83.7	80.9
Percent Overall Ethyl Branching	8.4	8.2	8.3
Percent Overall Propyl and Above Branching	11.7	8.0	10.8

THAT each of the sulfates described above and NEODOL® 45 alcohol sulfate were tested to determine the multisebum detergency achieved with a surfactant concentration of 0.4 grams per liter using a polyester/cotton fabric at 10°C and 150 ppm hardness of the water according to the procedure described in the specification of the present application; and that a different multisebum soil was used for these experiments than were used for the experiments described in the first Rule 132 Declaration and in the patent application (which were performed more than 10 years

ago) and that the multisebum detergency levels have been determined to be somewhat lower for the new multisebum soil than were obtained using the old multisebum soil; and that for LR 265222-98 and LR 24125-36, four different multisebum detergency measurements were taken and that for LR 24125-37 and the NEODOL® 45 alcohol sulfate, five different multisebum detergencies were measured; and that the results of these experiments are shown in the table below.

Table 2

	MS-1*	MS-2*	MS-3*	MS-4*	MS-5*	MS-Avg*
LR 26522-98	24.3	24.0	26.2	25.7	-	25.1
LR 24125-36	27.8	27.5	27.5	28.8	-	27.9
LR 24125-37	26.8	26.0	26.5	26.5	25.9	26.3
NEOLDOL® 45 sulfate	11.5	9.6	11.9	9.7	10.5	10.6

\* MS – multisebum detergency

THAT the data presented above shows that the detergency achieved with surfactants made with the branched alcohol sulfates within the scope of the claims of the present invention are more than twice as high as the detergency achieved using the commercially available NEODOL® 45 alcohol sulfate; and that these results are statistically significant because the Least Significant Difference at the 95 % confidence level ( $LSD_{95}$ ) for this data is about 2 [ $LSD_{95}$  is calculated using Analysis of Variance, and, in these studies, mean detergency values differing by at least 2 are statistically different to the 95% confidence level] ; and

THAT the data shown in the previous Declaration Under Rule 132 shows that there is a great difference in the multisebum detergency achieved with the branched fraction of NEODOL® 45 alcohol sulfate, which is a material which is similar to the claimed branched alcohol sulfates, as compared to the NEODOL® 45 alcohol sulfate per se (also more than twice as high); and that the multisebum detergency determined for the LIAL 145 alcohol sulfate was only slightly better than that of the NEODOL® 45 alcohol sulfate; and

THAT while the data presented in this Declaration cannot be compared directly with the data from the earlier Declaration and in the application, the relationship of the results achieved in all of the experiments remains the same; and

THAT it is reasonable to conclude from all of the data presented in the two declarations and in the examples of the application that branched alcohol sulfates within the scope of the claims of the present invention produce dramatically improved multisebum detergencies

compared to those achieved with the two commercial products they were compared against, NEODOL® 45 alcohol sulfate and LIAL 145 alcohol sulfate which is a product described in WO 91/16409, and that the claimed invention is not obvious in view of that reference.

William Warren Schmidt further declares that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date July 11, 2007

William Warren Schmidt  
William Warren Schmidt